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| 09/964,494 | 09/28/2001 | Hong Xie | 219.40430X00 | 2764 |

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EXAMINER

WILLIAMS, ALEXANDER O

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| ART UNIT | PAPER NUMBER |
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2826

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,494

Applicant(s)

XIE ET AL.

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) 15-17, 31-33, 47-49, 54 and 60 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 18-30, 34-46, 50-53, 61 and 62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Serial Number: 09/96494 Attorney's Docket #: 219.4043X00

Filing Date: 9/28/01;

Applicant: Xie et al.

Examiner: Alexander Williams

Applicant's election of species of Figure 9 with traverse (claims 1 to 14, 18 to 30, 34 to 46, 50 to 53, 55 to 59, 61 and 62) in Paper # 9, filed 3/20/03, has been acknowledged.

Applicant's election with traverse of Group I (device claims 1-22) in Paper No. 5 is acknowledged.

Applicant's arguments on pages 1 and 2 have been considered, but are not found to be persuasive. The generic claims DO NOT read on ALL the generic claims. The requirement is still deemed proper and is therefore made FINAL.

This application contains claims 15-17, 31-33, 47-49, 54 and 60 drawn to an invention non-elected with traverse in Paper No. 9. A complete response to the final rejection must include cancellation of non-elected claims or other appropriate action (see 37 CFR § 1.144 & MPEP § 821.01).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities: This application should list any related application information.

Appropriate correction is required.

Claims 13, 29 and 45 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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In claims 13, 29 and 45, it is unclear and confusing to what is meant by "the IHS/IS being electrically connectable to the substrate." How is this electrically connected? Where is this shown in the drawing?

Any of claims 13, 29 and 45 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 6 to 14, **insofar as some of them can be understood**, are rejected under 35 U.S.C. § 102(e) as being anticipated by Tao et al. (U.S. Patent # 6,191,360 B1).

For example, in claim 1, Tao et al. (figures 1 to 11) specifically **figure 3** show an integrated heat spreader/integrated stiffener (HIS/IS) **4** mountable to provide stiffening support to a substrate **30**.

Initially, and with respect to claims 5, 21 and 37, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tao et al. (U.S. Patent # 6,191,360 B1).

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 2 to 5, 18 to 30, 34 to 46, 50 to 53, 61 and 62, **insofar as some of them they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over in Tao et al. (U.S. Patent # 6,191,360 B1) view of Greenwood (U.S. Patent # 6,338,985 B1).

Tao et al. show the features of the claimed invention as detailed above, but fail to explicitly show one of a thin-core and coreless substrate of an integrated circuit printed circuit board carrier package.

Greenwood is cited for showing chip size semiconductor packages. Specifically, Greenwood (figures 1 to 10) specifically figures 1 and 3) discloses a thin-core substrate

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12 of an integrated circuit printed circuit board carrier package (see column 4, lines 5-14) for the purpose of providing a package where reliability can be determined.

For example, in claim 18, the combination of Tao et al and Greenwood show a carrier package comprising: one of a thin-core and coreless substrate (**12 in Greenwood**) of an IC-PCB; and an (HIS/IS) (**34 in Tao et al.**) mountable to provide stiffening support to a substrate.

Claims 21 and 37, as to the grounds of rejection under section 103, see MPEP § 2113.

For example, in claim 34, the combination of Tao et al and Greenwood show a packaged integrated circuit (IC) comprising: an IC-PCB carrier package including one of a thin-core and coreless substrate (**12 in Greenwood**) of an IC-PCB; and an (HIS/IS) (**34 in Tao et al.**) mountable to provide stiffening support to a substrate.

For example, in claim 50, the combination of Tao et al and Greenwood show a heat spreader/stiffener device comprising a thermally conductive member (**34 in Tao et al.**) having a stiffener portion mountable to one of thin-core and coreless substrate (**12 in Greenwood**) so as to increase a stiffness thereof, the heat spreader/stiffener device having a thermal path thermally connectable to the substrate.

For example, in claim 55, the combination of Tao et al and Greenwood show an integrated circuit (IC) carrier package comprising: an IC; at least one of a thin-core and coreless substrate (**12 in Greenwood**); and heat spreader/stiffener device comprising a thermally conductive member (**34 in Tao et al.**) having a stiffener portion mountable to one of thin-core and coreless substrate so as to increase a stiffness thereof, the heat spreader/stiffener device having a thermal path thermally connectable to the substrate.

For example, in claim 61, the combination of Tao et al and Greenwood show an electronic system comprising: an integrated circuit (IC) carrier package comprising: an IC; at least one of a thin-core and coreless substrate (**12 in Greenwood**); and heat spreader/stiffener device comprising a thermally conductive member (**34 in Tao et al.**) having a stiffener portion mountable to one of thin-core and coreless substrate so as to increase a stiffness thereof, the heat spreader/stiffener device having a thermal path thermally connectable to the substrate.

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Therefore, it would have been obvious to one of ordinary skill in the art to use Greenwood's thin-core substrate to modify Tao et al.'s substrate for the purpose of providing a package where reliability can be determined.

The listed references are cited as of interest to this application, but not applied at this time.

| Field of Search | Date |
|--|---------|
| U.S. Class and subclass: 257/712,713,717,720,700,701,738,704,706,710,696- 698,738,737,734,778,734 | 5/30/03 |
| Other Documentation: foreign patents and literature in 257/712,713,717,720,700,701,738,704,706,710,696- 698,738,737,734,778,734 | 5/30/03 |
| Electronic data base(s): U.S. Patents EAST | 5/30/03 |

Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.

Any inquiry concerning this communication or any earlier communication from the examiner should be directed to ***Examiner Alexander Williams*** whose telephone number is ***(703) 308-4863***.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center 2800 receptionist** whose telephone number is **(703) 308-0956**.

5/30/03

A handwritten signature in black ink, appearing to read 'Alexander O. Williams', written in a cursive style.

Primary Examiner
Alexander O. Williams